



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : A61F 13/15	A1	(11) International Publication Number: WO 99/12502 (43) International Publication Date: 18 March 1999 (18.03.99)
(21) International Application Number: PCT/CA97/00634 (22) International Filing Date: 8 September 1997 (08.09.97) (71)(72) Applicant and Inventor: BROWNLEE, James, Roy [CA/CA]; 2850 Rosebery Avenue, West Vancouver, British Columbia V7E 3A4 (CA). (74) Agent: GREEN, Bruce, M.; Oyen Wiggs Green & Mutala, #480 - 601 West Cordova Street, Vancouver, British Columbia V6B 1G1 (CA).		(81) Designated States: AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, ES, FI, FI (Utility model), GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>
(54) Title: DISPOSABLE NON-ABSORBENT DIAPER SHELL WITH REMOVABLE AND REPLACEABLE ABSORBENT PAD AND METHOD OF MANUFACTURE OF SAME <div data-bbox="357 1155 1347 1491"> </div>		
(57) Abstract <p>A disposable diaper which is adapted for multiple uses by means of a removable and replaceable absorbent pad is provided. The diaper consists of a standard disposable diaper, as currently available, with adhesive closures and elasticized legs, but without an integral central absorbent layer. A separate disposable absorbent pad is provided in the central crotch area of the disposable diaper, connected to the disposable diaper layer by a releasable adhesive strip. A method of manufacturing the diaper by conventional sandwiching methods in which the absorbent pad is not secured in the diaper, but rather a releasable adhesive strip, or an area for receiving same, is provided in the spine area of the diaper is also provided.</p>		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon		Republic of Korea	PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

DISPOSABLE NON-ABSORBENT DIAPER SHELL
WITH REMOVABLE AND REPLACEABLE ABSORBENT PAD
AND METHOD OF MANUFACTURE OF SAME

5 Technical Field

The invention relates to the construction of infant diapers, and particularly to a disposable diaper having a re-usable non-absorbent shell and a replaceable absorbent pad.

10

Background Art

Existing infant diapers are of three types: 1) disposable; 2) non-disposable (completely machine washable); and 3) non-disposable (machine washable)
15 fabric shell with replaceable disposable absorbent insert.

Existing disposable diapers comprise a liquid impervious outer layer, an inner non-woven liner and an integral layer of absorbent material, typically pulp fluff or air laid paper, sandwiched between the inner and outer layers. The main
20 drawbacks of the purely disposable diaper are cost and volume of waste, since the entire garment is disposed of after a single use. If the diaper is wetted or soiled even slightly, the entire diaper is discarded, at considerable expense and causing considerable waste. Partially or completely non-disposable diapers generate less waste but are more expensive in initial cost and require work and resources for washing the diaper
25 or shell. For that reason, cloth diapers are less popular than disposable diapers due to the expense, time and labour required to wash them.

There is therefore a need for a purely disposable diaper design which reduces the expense and volume of waste created by allowing the outer liquid
30 impervious, non-absorbent shell of the diaper to be re-used.

Various attempts have been made to make disposable diapers completely flushable. One such attempt has been to provide a water soluble outer

shell for the disposable diaper. For example Ecoprogress Limited of Cambridge, England has disclosed in European patent application no. EP 6133362, and international application WO 9309740 published May 27, 1993, a water soluble film for use as the outer layer of a disposable article such as a diaper. The article
5 comprises a bound viscose layer sealed to a water soluble backing layer with an intermediate super-absorbent. The water soluble backing material is made capable of maintaining its integrity during wetting in use by forming it of a layer of relatively soluble material and a layer of less soluble material or it may be a soluble membrane with a discontinuous layer of relatively insoluble material applied to one or more
10 surfaces thereof.

The foregoing structure has not been commercially useful in disposable diapers for two reasons. First the water soluble film product is too expensive to be commercially accepted. Secondly the current structure of disposable diapers provides
15 a layer of absorbent pulp which is glued to the backing shell. The combination of the pulp layer and water soluble backer is not usefully flushable, since it is too bulky, and the layer of non-soluble pulp delays the breakdown of the water soluble layer.

Disclosure of Invention

20

Consequently, the present invention provides a fully-disposable diaper which, nonetheless, is adapted for multiple uses by means of a removable and replaceable absorbent pad. The disposable diaper of the invention consists of a non-absorbent outer liquid impervious shell, as in a standard disposable diaper, and may
25 have adhesive closures and elasticized legs, but without an integral central absorbent layer. Rather, a separate disposable absorbent pad is provided in the central crotch area of the disposable diaper, and may be connected to the disposable diaper layer by a releasable adhesive strip.

30

The invention further provides a method of manufacturing the diaper by conventional sandwiching methods in which the absorbent pad or material is not

incorporated into the diaper, but rather a releasable adhesive strip, or an area for receiving same, is provided in the crotch area of the diaper.

- The invention therefore provides a product and a method of manufacturing the product. The product has three aspects:
- 1) a disposable diaper shell without absorbent material in the centre crotch area but capable of accepting a removable and replaceable absorbent pads:
 - 2) a disposable diaper shell with a removable absorbent pad removably secured therein: and
 - 3) a disposable diaper shell without absorbent material in the centre crotch area in combination with a plurality of replaceable absorbent pads which can be secured therein.

The method of manufacture provides a method of producing a disposable diaper without absorbent centre capable of accepting removable and replaceable absorbent pads by following a conventional disposable diaper manufacturing process while omitting the insertion of the absorbent pad material and providing one or more releasable adhesive strips in the spine or crotch area of the diaper. Alternatively the spine or crotch area of the diaper shell can be adapted to receive an absorbent pad insert having a releasable adhesive thereon. The removable pad insert can be manufactured and packaged separately, or alternatively can be inserted into the shell during the manufacturing and packaging process.

Brief Description of Drawings

25

In drawings which disclose a preferred embodiment of the invention:
Fig. 1 is a perspective view of a conventional disposable infant diaper;
Fig. 2 is a cross-section taken along line 2-2 of Fig. 1 (not to scale);
Fig. 3 is a perspective view of the disposable non-absorbent infant
diaper shell of the invention;
Fig. 4 is a cross-section taken along line 4-4 of Fig. 3 (not to scale);

- 4 -

Fig. 4A is a cross-section illustrating a second embodiment of the invention taken along line 4-4 of Fig. 3 (not to scale);

Fig. 5 is a perspective view of the removable/ replaceable absorbent pad of the invention; and

5 Fig. 6 is a cross-section taken along line 6-6 of Fig. 5 (not to scale).

Best Mode(s) For Carrying Out the Invention

Fig. 1 illustrates a conventional disposable diaper 10. It is constructed of an hour-glass shaped backsheet 12 made of a lightweight liquid-impervious polyethylene plastic, a non-woven liner 14 made from a non-absorbent synthetic plastic such as non-woven polypropylene, and an absorbent pad 16 sandwiched between backsheet 12 and liner 14. The diaper has a back waist section 18, front waist section 20, and crotch area 26. Adhesive flaps 28 are provided to attach the garment around the infant. Areas 29 of high gloss polyethylene plastic film are provided on backsheet 12 to which adhesive strips 28 can releasably adhere without tearing the backsheet 12 on removal. Elasticized leg cuffs 30, 32 are formed in the non-woven liner with elastic members 38 running along inner edges 40, 42. Further elastic members 38 are provided along lines 44, 46. Elastic members 38 are typically thin rubber ribbons, or a hot melt elastomeric adhesive may be used as is known in the disposable diaper art.

As illustrated in Figure 2, the non-woven liner 14 comprises three sections, an inner hydrophillic sheet 15 and outer hydrophobic sheets 17. Sheet 15 permits moisture to penetrate to pad 16 while keeping the skin of the infant away from the pad 16. Sheets 17 form the leg cuffs 30, 32 which retain fecal matter and moisture in the central crotch area 26. Absorbent pad 16 is formed of pulp fluff material which is wrapped in a thin layer of absorbent paper tissue to maintain the integrity of the pad and prevent bunching of the fluff. Crystals of super absorbent polymers are typically distributed throughout the fluff to increase the absorbency of the pad 16.

In the existing manufacturing process, the two outer hydrophobic sheets 17 are first typically formed by slicing a tensioned sheet of the material and then forming outward folds 19 around elastic members 38. Sheet 15 is then glued or heat welded at either edge 21, 23 to outer sheets 17 along lines 25, 27. In a continuous process, non-woven liner 14, backsheet 12 and pad 16 are then glued or heat welded into a single unitary sandwich, with glue typically applied to the upper surface of backsheet 12 to secure pad 16 and liner 17. A few small spaced drops of glue are also applied to the top of pad 16 in spaced locations to attach it to sheet 15 and prevent movement of the pad 16.

10

The disposable diaper shell 50 of the present invention is shown in Fig. 3 and 4. The backsheet 52 and liner 54 are formed in a manner similar to the conventional disposable diaper 10, however no absorbent pad or material 16 is provided in the crotch area. Elasticized leg cuffs 62, 64 are formed in outer liner sheets 57. The central hydrophillic liner 15 is omitted and in its place one or more strips 56 having a layer of releasable pressure-sensitive adhesive 59, such as is used on flaps 28, is provided. While the use of three adhesive strips 56 has been shown, one or two such strips would be sufficient for operation of the invention. Use of a single central strip 56a makes attachment of the pad easier and improves the lateral stretchability of the garment. The use of two strips 56b adjacent the leg cuffs reduces the possibility of a gap forming between the pad and the leg cuff along which liquid can flow over the ends of the diaper.

In a second embodiment shown in Fig. 4A, a liner sheet 55 corresponding to the liner sheet 15 can be included for ease of manufacture, and glued to backer 52 along with liner sheets 57. The adhesive strip or strips 56 are then applied to the upper surface of sheet 55.

To make diaper shell 50 useable, a disposable absorbent pad 70 is provided to attach to adhesive strip or strips 56. The pad is sized to fit snugly up against leg cuffs 62, 64 along either edge 72, 74 and not to extend beyond waist areas

30

68, 70. Such pad has a mass of absorbent material 75 which may be manufactured from any of the existing absorbent materials, pulp fluff, super-absorbent polymer, air-laid paper, air-laid paper with thermally-bonded super-absorbent polymer materials of the type manufactured by Merfin Hygienic Products Ltd, or fibrous super-absorbent polymer. The absorbent material 75 is preferably wrapped in a layer 76 of non-woven hydrophillic material to keep the skin of the infant from the pad, and may also be provided with an absorbent paper tissue wrap (not shown) between the absorbent material 75 and layer 76 to improve wicking and absorbency. The lower surface 71 of pad 70 is provided with one or more areas 73 of polyethylene plastic film (of the sort used on areas 29 of the conventional diaper in Fig. 1) according to the location of strips 56 in shell 50, to which adhesive strips 56 can releasably adhere without tearing the pad on removal. Alternatively the entire lower surface of pad 70 could be provided with a polyethylene film coating, although it is preferred to leave absorbent areas accessible to the flow of liquid on the lower surface 71 of pad 70.

15

The pad 70 is manufactured as a separate element and may be packaged and sold separately to the consumer. Shell 50 can similarly be provided to the consumer without a pad 70 secured therein. In that case the adhesive strip 56 on the shell 50 will be provided with a layer of release paper 59 to cover the adhesive 56 until use. Alternatively a pad 70 can be secured to the adhesive strip 56 during the manufacturing and packaging process after the shell 50 has been manufactured. To use the invention in the case of the latter, the consumer will apply the diaper to the infant in the usual way as with the conventional disposable diaper. After the pad 70 has been wet or soiled, it is removed from shell 50 and either flushed down the toilet or placed in a waste disposal container. Shell 50 can then be rinsed, and a fresh pad 70 is applied to adhesive strip 56. After one or more replacement pads have been similarly used, the shell 50 can be discarded and a new shell 50 and pad 70 used. In this way, the disposable diaper shell 50 may be re-used once or several times until it also becomes soiled, or the adhesive strips 56 or adhesive closure strips 28 no longer function. The disposable diaper shell 50 cannot practically be machine washed but in this way an inexpensive disposable diaper shell can be reused at least once and

30

perhaps several times, thereby drastically reducing the consumption of materials and the resulting expense and waste. At the same time, no significant amount of additional work is required by the mother in terms of washing. In this way, the present invention provides a fully-disposable diaper which, nonetheless, is adapted for multiple uses by means of a removable and replaceable absorbent pad.

While preferably the adhesive strips are provided on the disposable diaper shell 50, it will be readily apparent that the releasable adhesive strips could be provided on pads 70 with only a suitable surface to receive the adhesive being provided in the central area 26 of shell 50. The central crotch area of the disposable diaper shell 50 may in that case have a shiny low-friction type of surface which will readily release the adhesive strip attached to the removable absorbent pad/insert and may be strengthened so as not to tear when the pad is removed. Other forms of securement such as hook and loop fastener strips may be used in place of the adhesive strips 56 and indeed the securing strips 56 can be omitted and leg cuffs 62, 64 relied on to hold the pad 70 in place.

While preferably the disposable diaper outer has no absorbent layer, it is possible that certain areas of the outer could incorporate absorbent material to provide additional emergency absorbency for exceptional circumstances, or to improve the fit and shaping of the diaper. Different types of absorbent pad/inserts 70 could be provided, such as those with perfume, disinfectant or anti-bacterial additives and the like. The insert 70 may be bio-degradable and/or flushable. The invention is also applicable to disposable training pants/pull-ups.

25

Further, while preferably the disposable diaper shell 50 is provided with leg cuffs 62, 64 as in the popular form of disposable diapers, it will be readily apparent that the principle of the invention will also work using a diaper shell 50 which has no leg cuffs 62, 64.

30

In a preferred form of the present invention the outer shell is formed of a water soluble flushable material such as the material referred to as B-9 film manufactured by Ecoprogress Limited of Cambridge, England and disclosed in European patent application no. EP 6133362, and international application WO 9309740 published May 27, 1993. In combination with the invention, the use of such material becomes commercially useful for two reasons. First, the splitting of the shell and absorbent material in the present disposable invention reduces the bulk of the shell and permits the water to access the water soluble film more readily to break it down. The reduced bulk is particularly useful for flushability in modern low volume flush toilets. Secondly, the fact that the shell is re-used several times makes the cost of the more expensive film competitive with standard single use disposable diapers. This latter advantage makes the present invention useful for taking advantage not only of existing water soluble films but other more expensive but useful films or other materials which may be desired for use in disposable diapers. Materials which are desirable for use in the shell or elsewhere in the diaper due to superior physical characteristics such as biodegradability, or breathability, but which have been commercially unacceptable to date due to cost, will be more acceptable for use in the present invention due to the multiple uses possible for each disposable shell and the resultant reduction in cost per use.

20

As will be apparent to those skilled in the art in the light of the foregoing disclosure, many alterations and modifications are possible in the practice of this invention without departing from the spirit or scope thereof. Accordingly, the scope of the invention is to be construed in accordance with the substance defined by the following claims.

25

WHAT IS CLAIMED IS:

1. A disposable diaper shell comprising a pliant non-absorbent, liquid impervious body for removable fitting to the wearer, forming an interior and an exterior surface,
5 a front and back portion, opposed side edges and a crotch area when so fitted, said diaper shell comprising opposed, non-absorbent liner portions secured along said opposed side edges of said body and forming opposed elastically contractible leg cuffs extending between said front and back portion, said opposed elastically contractible leg cuffs thereby defining a central region between said opposed leg cuffs extending
10 between said front and back portion, said central region being without absorbent material and without any additional liquid impervious layers on said interior surface of said liquid impervious body, said central region being adapted for removably receiving an absorbent pad in said crotch area.
- 15 2. The disposable diaper shell of claim 1 wherein said body comprises means for removably securing an absorbent pad in said crotch area, comprising an area of pressure sensitive releasable adhesive on the non-absorbent, liquid impervious interior surface in the crotch area of said body.
- 20 3. The disposable diaper shell of claim 1 wherein said diaper shell further comprises a central layer of non-absorbent liner material on the non-absorbent, liquid impervious interior surface in said central region and an area of pressure sensitive releasable adhesive on said central non-absorbent liner in the crotch area of said body.
- 25 4. The disposable diaper shell of claim 2 wherein said area of pressure sensitive releasable adhesive on the non-absorbent, liquid impervious interior surface in the crotch area of said body comprises a strip of pressure sensitive releasable adhesive extending centrally in said crotch area between said front and back portion.
- 30 5. The disposable diaper shell of claim 2 wherein said area of pressure sensitive releasable adhesive on the non-absorbent, liquid impervious interior surface in the

crotch area of said body comprises two parallel strips of pressure sensitive releasable adhesive in said crotch area adjacent respective ones of said leg cuffs and extending between said front and back portion.

5 6. The diaper shell of claim 1 wherein said pliant, non-absorbent, liquid impervious body comprises a polyethylene plastic film.

7. The diaper shell of claim 2 further comprising an absorbent pad adapted for removably securing to said central region in said crotch area, said pad comprising a
10 layer of absorbent material and upper and lower surfaces, said lower surface being adapted for removably receiving and releasing a pressure sensitive adhesive area, and said upper surface of said pad comprising a hydrophillic outer layer.

8. The diaper shell of claim 3 further comprising an absorbent pad adapted for
15 removably securing to said central region in said crotch area, said pad comprising a layer of absorbent material and upper and lower surfaces, said lower surface being adapted for removably receiving and releasing a pressure sensitive adhesive area, and said upper surface of said pad comprising a hydrophillic outer layer.

20 9. The diaper shell of claim 7 wherein said lower surface of said absorbent pad is provided with areas of a polyethylene plastic film.

10. The diaper shell of claim 8 wherein said lower surface of said absorbent pad is provided with areas of a polyethylene plastic film.

25 11. The diaper shell of claim 7 wherein said upper surface of said absorbent pad comprises a non-woven hydrophillic outer layer.

12. The diaper shell of claim 8 wherein said upper surface of said absorbent pad
30 comprises a non-woven hydrophillic outer layer.

13. In combination in a package, the diaper shell of claim 28 and a plurality of absorbent pads, each said pad comprising a layer of absorbent material and upper and lower surfaces, said lower surface being adapted for removably receiving and releasing a pressure sensitive adhesive area, and said upper surface of said pad
5 comprising a hydrophillic outer layer.

14. In combination in a package, the diaper shell of claim 3 and a plurality of absorbent pads, each said pad comprising a layer of absorbent material and upper and lower surfaces, said lower surface being adapted for removably receiving and
10 releasing a pressure sensitive adhesive area, and said upper surface of said pad comprising a hydrophillic outer layer.

15. The diaper shell of claim 1 further comprising an absorbent pad adapted for removably securing to said central region in said crotch area, said pad comprising a
15 layer of absorbent material and upper and lower surfaces, said lower surface comprising a pressure sensitive adhesive area, and said upper surface of said pad comprising a hydrophillic outer layer.

16. In combination in a package, the diaper shell of claim 1 and a plurality of
20 absorbent pads, each said pad adapted for removably securing to said central region in said crotch area, said pad comprising a layer of absorbent material and upper and lower surfaces, said lower surface comprising a pressure sensitive adhesive area, and said upper surface of said pad comprising a hydrophillic outer layer.

25 17. A method of manufacturing a diaper shell without absorbent material in the crotch area thereof and adapted for removably securing an absorbent pad, said method comprising bonding in a continuous process a sheet of non-woven hydrophobic liner material to a sheet of liquid impervious backsheet material, providing a releasable adhesive strip along the central surface area of said backsheet and cutting said
30 bonded sheets to form a disposable diaper shell comprising a non-absorbent, liquid impervious body and a non-absorbent liner having opposed elastically contractible leg

cuffs, said diaper shell being without absorbent material in said crotch area of said body and being adapted for removably securing an absorbent pad in said crotch area.

18. A method of manufacturing a combination disposable diaper shell with non-absorbent crotch area and removable absorbent pad comprising:

- i) following a conventional disposable diaper manufacturing process while omitting the insertion of the absorbent material, and providing a releasable adhesive strip in the crotch area of said diaper shell;
- ii) manufacturing a roll of absorbent pad material adapted for securing to the crotch area of a garment said pad having upper and lower surfaces, said lower surface being adapted for removably receiving and releasing a pressure sensitive adhesive area, and said upper surface of said pad comprising a hydrophillic outer layer;
- iii) securing the pads to the diaper shell in a continuous process.

15

19. The disposable diaper shell of claim 1 wherein said pliant, non-absorbent, liquid impervious body comprises a water soluble film.

20. The disposable diaper shell of claim 1 wherein said pliant, non-absorbent, liquid impervious body comprises a biodegradable film.

20

1/4

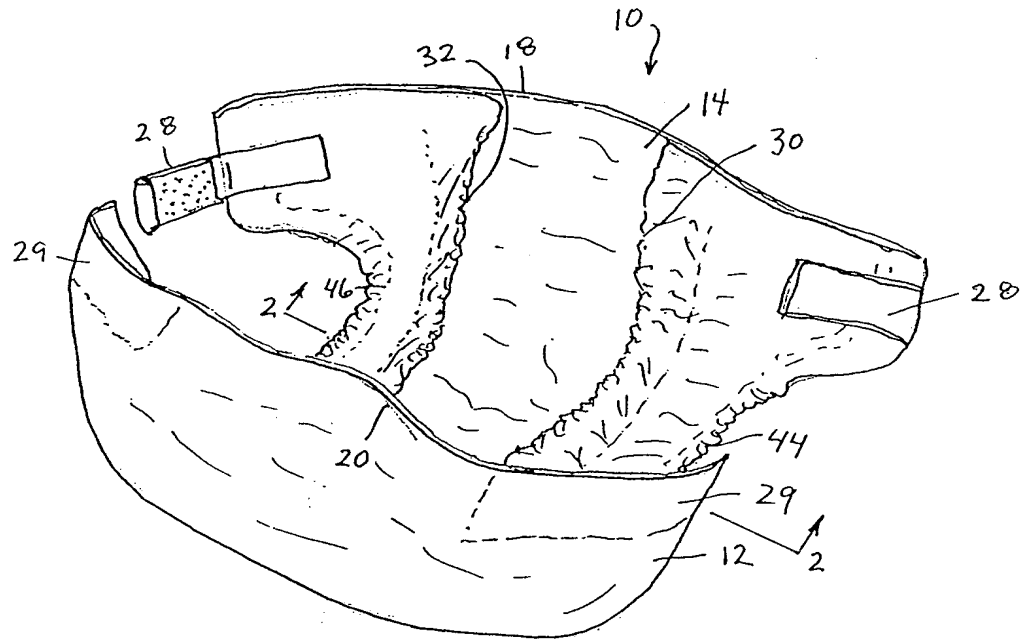


FIG. 1

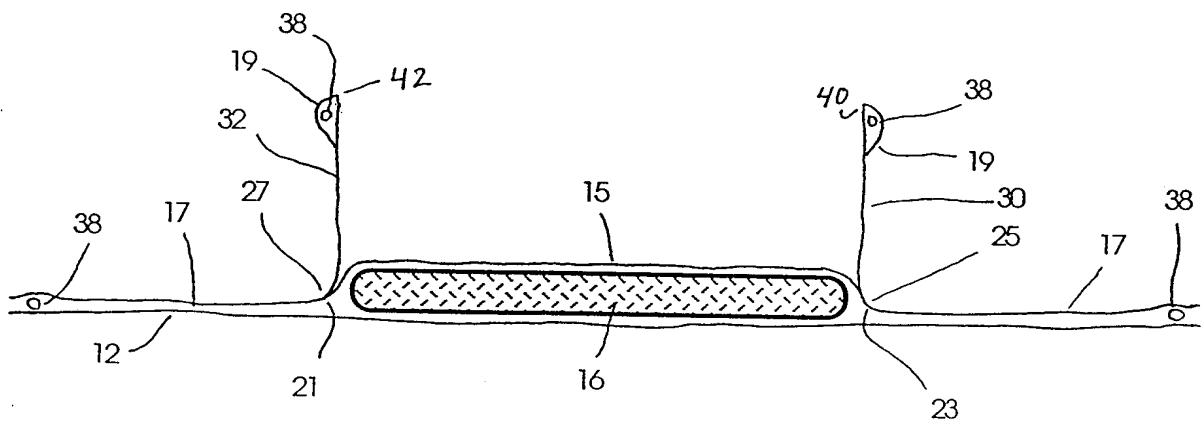


FIG. 2

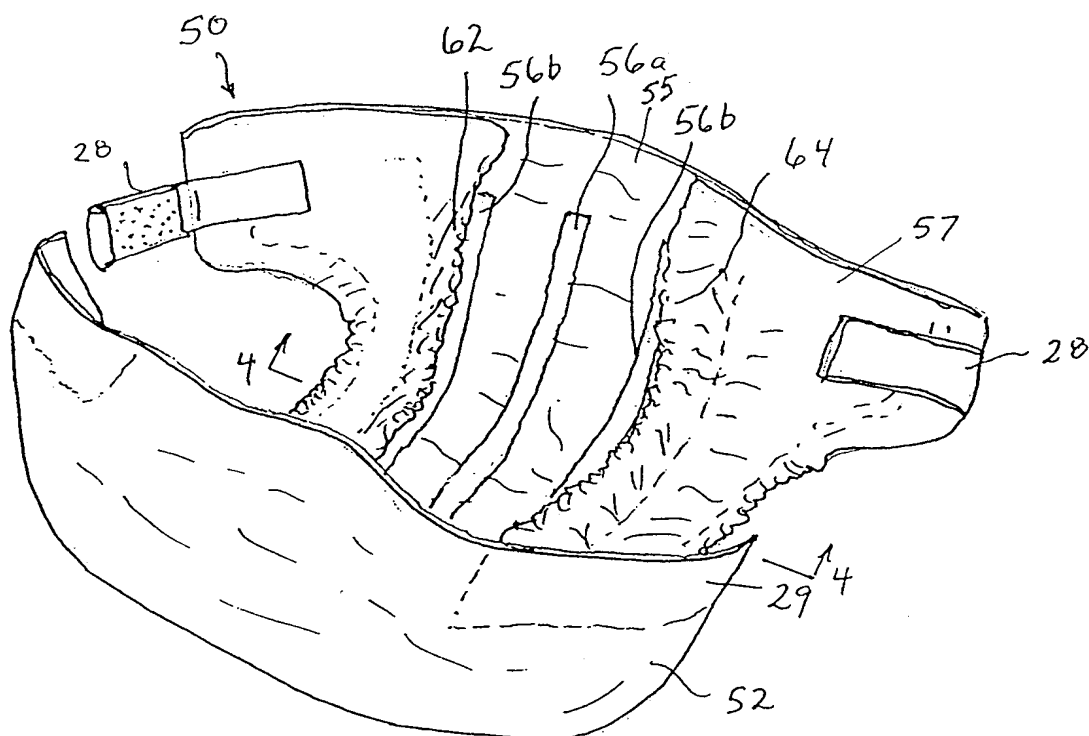


FIG. 3

3/4

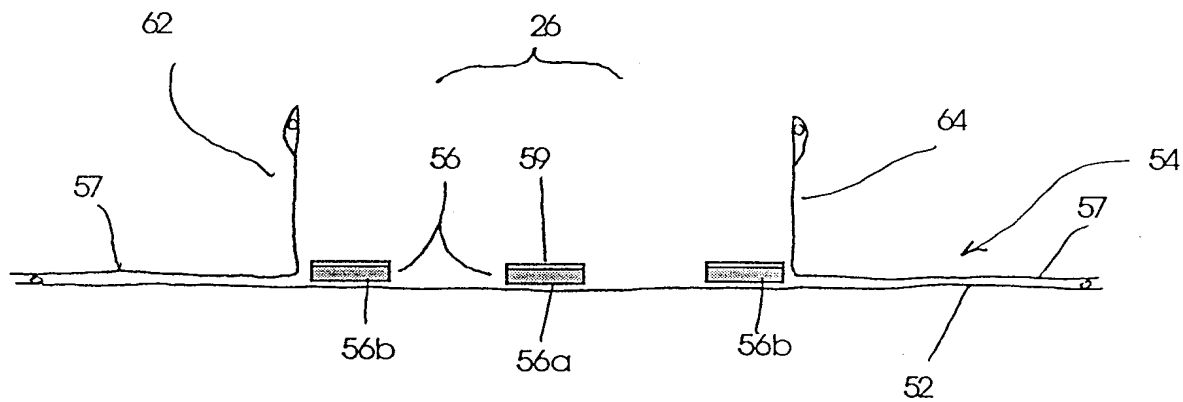


FIG. 4

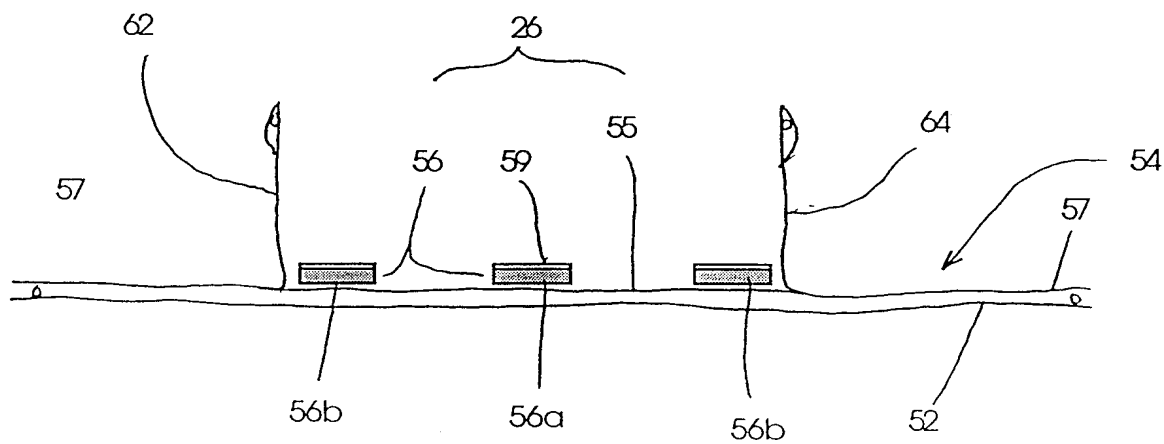


FIG. 4A

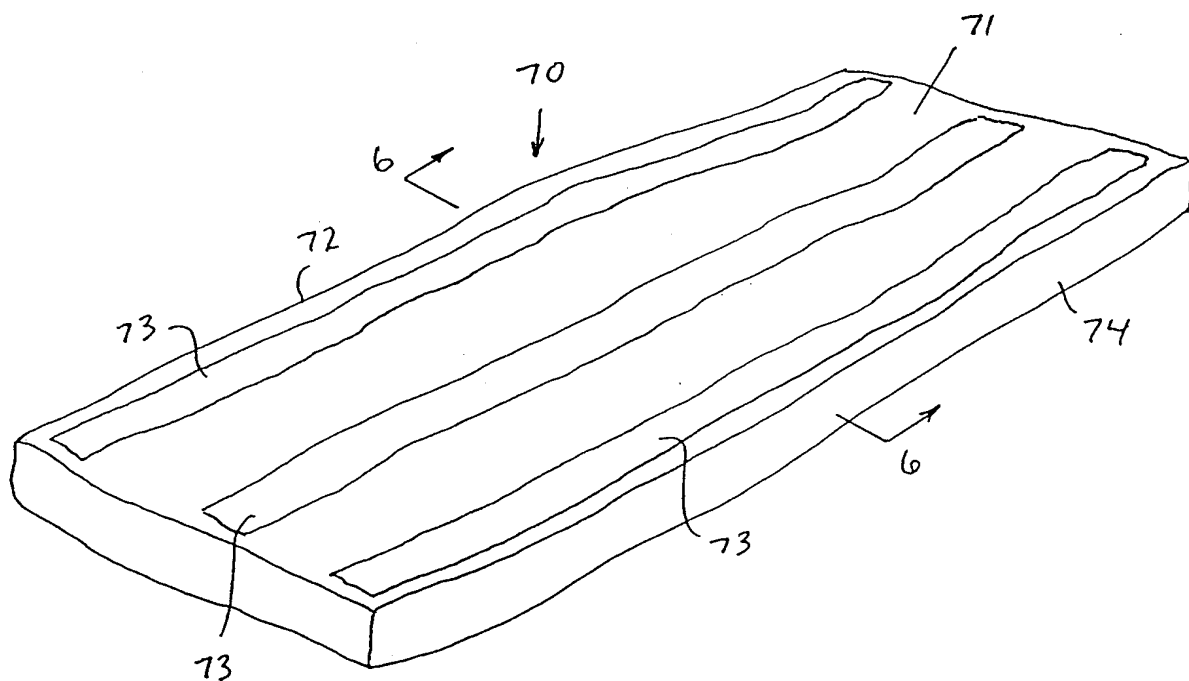


FIG. 5

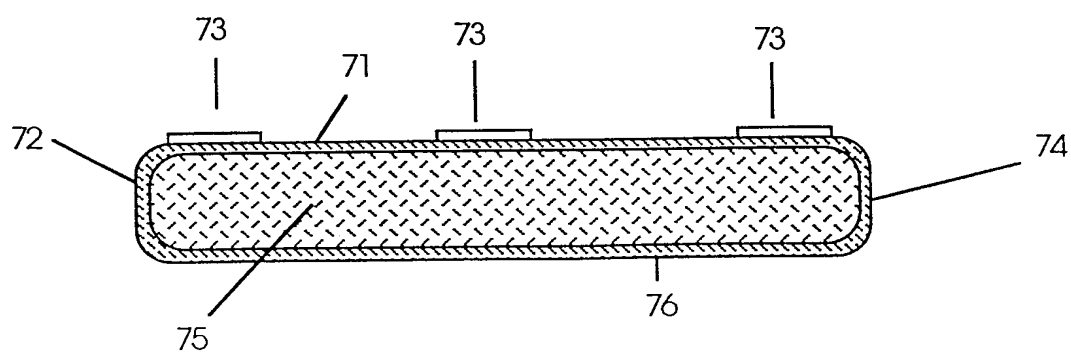


FIG. 6

INTERNATIONAL SEARCH REPORT

Int'l Application No

PCT/CA 97/00634

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A61F13/15

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 103 930 A (VERNON CARUS LTD) 2 March 1983 see page 1, line 99 - line 106; claims; figures	1,2,4,7
A	---	5,6,9-12
X	GB 2 142 541 A (PROCTER & GAMBLE) 23 January 1985 see page 2, line 100 - line 111; claims 1-5,10; figures 1-16	1
A	see page 3, line 14 - line 27	2-4,6-12
X	GB 2 148 095 A (PROCTER & GAMBLE) 30 May 1985 see claims; figures 1-5	1
A	---	2-4,6-12
	-/--	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

14 May 1998

Date of mailing of the international search report

25/05/1998

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Mirza, A

INTERNATIONAL SEARCH REPORT

Int'l Application No

PCT/CA 97/00634

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 325 543 A (ALLEN TANYA R) 5 July 1994 see column 7, line 23 - line 60; claims; figures	1
A	see column 5, line 13 - line 20 ---	17,18,20
X	WO 97 18785 A (KIMBERLY CLARK CO) 29 May 1997 see page 9, line 33 - page 10, line 2 see page 10, line 21 - line 28	1,6
A	see page 14, line 23 - page 16, line 4 ---	9
X	WO 93 23000 A (MOELNLYCKE AB ;HEDLUND GUNILLA (SE); MAGNUSSON ING BRITT (SE)) 25 November 1993 see claims; figures ---	1
A	EP 0 763 353 A (UNI CHARM CORP) 19 March 1997 see abstract; claims 1-7; figures ---	1,2
A	WO 85 03430 A (BRIER MICHAEL I) 15 August 1985 see claims 1,9,15-18 ---	1,13,14, 16
A	WO 96 29037 A (PROCTER & GAMBLE) 26 September 1996 see claims 1,3 ---	1,13,14, 16
A	EP 0 430 443 A (ARCO CHEM TECH) 5 June 1991 see claims -----	1,17,18

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 97/00634

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2103930 A	02-03-1983	NONE	
GB 2142541 A	23-01-1985	US 4597760 A	01-07-1986
GB 2148095 A	30-05-1985	US 4650483 A	17-03-1987
US 5325543 A	05-07-1994	CA 2048214 A	12-07-1992
WO 9718785 A	29-05-1997	AU 7521396 A	11-06-1997
WO 9323000 A	25-11-1993	SE 9003774 A	28-05-1992
EP 0763353 A	19-03-1997	JP 9075390 A	25-03-1997
		AU 6448196 A	20-03-1997
		CA 2184970 A	14-03-1997
WO 8503430 A	15-08-1985	US 4664663 A	12-05-1987
		AU 3990285 A	27-08-1985
		EP 0170700 A	12-02-1986
WO 9629037 A	26-09-1996	AU 4991496 A	08-10-1996
		CA 2213658 A	26-09-1996
		EP 0814739 A	07-01-1998
EP 0430443 A	05-06-1991	CA 2027234 A	09-05-1991
		JP 3168147 A	19-07-1991

DERWENT-ACC-NO: 1999-214900

DERWENT-WEEK: 199932

COPYRIGHT 2010 DERWENT INFORMATION LTD

TITLE: Disposable reusable non absorbent
liquid impervious nappy shell

INVENTOR: BROWNLEE J R

PATENT-ASSIGNEE: BROWNLEE J R[BROWI]

PRIORITY-DATA: 1997WO-CA00634 (September 8, 1997)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE
WO 9912502 A1	March 18, 1999	EN
AU 9741089 A	March 29, 1999	EN

DESIGNATED-STATES: AL AM AT AU AZ BA BB BG BR BY CA CH
CN CU CZ DE DK EE ES FI GB GE GH HU
ID IL IS JP KE KG KP KR KZ LC LK LR
LS LT LU LV MD MG MK MN MW MX NO NZ
PL PT RO RU SD SE SG SI SK SL TJ TM
TR TT UA UG US UZ VN YU ZW AT B E CH
DE DK EA ES FI FR GB GH GR IE IT KE
LS LU MC MW NL OA PT SD SE SZ UG ZW

APPLICATION-DATA:

PUB-NO	APPL- DESCRIPTOR	APPL-NO	APPL-DATE
WO1999012502A1	N/A	1997WO- CA00634	September 8, 1997
AU 9741089A	Based on	1997AU- 041089	September 8, 1997

INT-CL-CURRENT:

TYPE

IPC DATE

CIPS

A61F13/15 20060101

ABSTRACTED-PUB-NO: WO 9912502 A1

BASIC-ABSTRACT:

NOVELTY - A disposable reusable nappy shell (50) has a non-absorbent liquid impervious body with liner portions secured along opposed side edges to form elastic leg cuffs (62, 64) with a central region with pressure sensitive releasable adhesive (59) between for removably receiving an absorbent pad.

DESCRIPTION - INDEPENDENT CLAIMS are includes for (a) a nappy using the shell as above with a core and (b) a method for making the shell as above.

USE - In absorbing body excretions.

ADVANTAGE - Allows re-use in part.

DESCRIPTION OF DRAWING(S) - The drawing shows a perspective view of the nappy shell.

shell (50)

leg cuffs (62, 64)

adhesive. (59)

CHOSEN-DRAWING: Dwg.3/4

TITLE-TERMS:

DISPOSABLE REUSE NON ABSORB LIQUID
IMPERVIOUS NAPKIN SHELL

DERWENT-CLASS: A96 D22 F07 P32

CPI-CODES: A12-V03A; D09-C03; D09-C06; F04-C01; F04-E04;

ENHANCED-POLYMER-INDEXING: Polymer Index [1.1] 018 ;
P0000;

Polymer Index [1.2] 018 ;
ND01; Q9999 Q8004 Q7987;
Q9999 Q8015 Q7987; Q9999
Q7294; K9676*R; B9999
B3383*R B3372; N9999
N5721*R; N9999 N7192 N7023;
Q9999 Q7818*R;

Polymer Index [1.3] 018 ;
Q9999 Q6677 Q6644;

Polymer Index [2.1] 018 ;
G0044 G0033 G0022 D01 D02
D12 D10 D51 D53 D58 D82
R00326 1013; H0000; S9999
S1285*R; P1150; P1161;

Polymer Index [2.2] 018 ;
ND01; Q9999 Q8004 Q7987;
Q9999 Q8015 Q7987; Q9999
Q7294; K9676*R; B9999
B3383*R B3372; N9999
N5721*R; N9999 N7192 N7023;
Q9999 Q7818*R;

Polymer Index [2.3] 018 ;
B9999 B4864 B4853 B4740;
B9999 B4035 B3930 B3838
B3747; B9999 B3485*R B3372;
B9999 B3021 B3010; B9999
B3521*R B3510 B3372;

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: 1999-063280